ZALMAN

ZALMAN®
Zalman Tech Co., Ltd.

User's Manual

CNPS5100-Al
CNPS5100-AlCu
CNPS5100-Cu

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CNPS5100-Al, CNPS5100-AlCu, CNPS5100-Cu

The CNPS5100-Al / CNPS5100-AlCu / CNPS5100-Cu coolers come with an adjustable fan speed connector (FAN MATE 1) for allowing you to vary the CPU fan speed to create an optimal cooling environment.

1. Features

1) Zalman's CPU Coolers do not generate noise and vibration in silent mode.
2) The heat dissipating material of the Flower HeatSink (FHS) is pure copper or aluminum.
3) **Innovative FHS(Flower HeatSink) design offers lower noise and thermal resistance.**
4) **With the included adjustable fan speed connector, the user can freely adjust the CPU fan's RPM.**
5) Zalman's CPU Coolers cool a CPU to a temperature sufficiently below the temperature required by the CPU manufacturer without generating noise.
6) Zalman's CPU Coolers offer very stable operation of a CPU in an OVERCLOCKED environment.

* If you try OVERCLOCKING, please make sure that the fan is in Normal Mode.
* Zalman Tech. Co., Ltd. is not responsible for any damage to systems or CPUs caused by CPU OVERCLOCKING.

2. Components

1) One FHS assembly
2) Bolts A / Bolts B / Bolts C - four each
3) One Fan (6025)
4) Four Nipples (spacers)
5) Four Tapered Springs
6) One Sheet of Washers A (6 mm) and Washers B (8 mm)
7) Thermal Grease
8) One Adjustable Fan Speed Connector (FAN MATE 1)

3. Product Specifications

1) FHS

Spec. \ Model			CNPS5100-Al	CNPS5100-AlCu	CNPS5100-Cu
Dimensions (mm)			90 (L) × 66 (W) ×70(H)		
Weight (g)			238	290	454 (1)
FHS	Part NO.		ZM4360EE-Al	ZM4360EE-AlCu	ZM4360EE-Cu
	Dissipating Area (㎠)		1500		
	Dissipating Material		Pure Aluminum	Pure Aluminum + Pure Cooper	Pure Cooper
	Weight (g)		128	180	344
	Thermal Resistance (℃/W)	Silent Mode	0.43	0.42	0.39
		Normal Mode	0.26	0.25	0.23

Note 1) CNPS5100-Cu exceeds AMD's heatsink mass specification of 300g, so special care should be taken when moving the computer. Zalman Tech. Co., Ltd. is not responsible for any damage to systems or CPUs caused by moving the computer after installing the CNPS5100-Cu.

2) Fan (GM1206PTVX-AF)

① Dimensions : 60(L) X 60(H) X 25(W) mm
② Weight : 55g
③ RPM : 3000 RPM ± 10% (Silent Mode)
5200 RPM ± 10% (Normal Mode)
④ Noise Level : 20dB ± 10% (Silent Mode)
36dB ± 10% (Normal Mode)
⑤ Bearing Type : Vapo Bearing

* The specifications of any product may change without prior notice to improve the performance thereof.

3) FAN MATE 1

① Dimensions : 200(L) X 23(W) X 21(H) mm ② Weight : 20 g
③ Output Voltage : 5V ~ 11V ± 2% ④ Allowable Wattage : 6W or lower

4. Compatibility of CPU : Socket 462 - AMD Duron, AMD Athlon, AMD Athlon XP
Socket 423 - INTEL Pentium 4

Model \ CPU Type		INTEL	AMD			
		Pentium 4	Duron	Athlon	Athlon XP	**Athlon XP (T-Bird)**
CNPS5100-Al CNPS5100-AlCu	Silent Model	Up to 1.6GHz	Support all current CPU Clock speed	1.4GHz	Up to 1.67GHz (2000+)	Up to 2.0GHz (2400+)
	Normal Model	Up to 2.0GHz			Over 2.13GHz(2600+)	
CNPS5100-Cu	Silent Model	Up to 1.7GHz			Up to 1.73GHz (2100+)	Up to 2.13GHz (2600+)
	Normal Model	Over 2.0GHz			Over 2.13GHz(2600+)	

Note 2) This cooler cannot be mounted on a mainboard that does not have four holes around the socket. Also, Socket 478 mainboards are not supported.

5. Please keep the following in mind for a noiseless computer

1) For a noiseless computer, a Noise Prevention (NP) Power Supply, a NP HDD, a NP CD-ROM and a NP VGA CARD should be used together with this cooler.
2) Zalman affixes a Computer Noise Prevention System (CNPS) Mark to each of its parts and components used for noiseless computers.
3) If a high-performance VGA card is required, it is preferable to use a NP VGA Card having a VGA FHS.
4) When buying a new VGA card, it is recommended to buy a fanless VGA card.

6. Caution

1) The CNPS5100-XX can be mounted only on a mainboard having four holes around the CPU socket.
2) For mainboards on which the CNPS5005-XX can be mounted, please refer to the list of approved mainboards on Zalman's web site (www.zalman.co.kr/english/product/ccc/usmainboard.htm).
3) If the RPM of the CPU fan cannot be measured, please update the BIOS to the latest version. For more information on updating your BIOS, please refer to you the mainboard manufacturer's web site (There are some mainboards that cannot measure the RPM of fans in Silent Mode. However, this will not affect the performance.

7. Patent Applications

◇ Korean Patent Application No. 01-11056
◇ Patent Applications Pending in over 20 nations around the world, including the U.S., EU, and Japan

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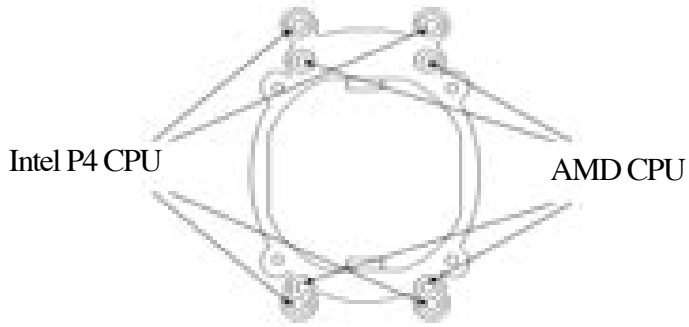
Installation of FHS

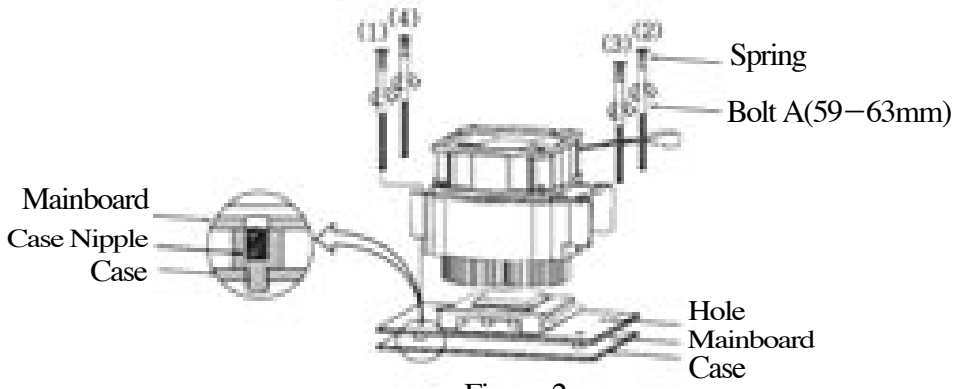
1. First, check whether your CPU is a P4 CPU or an AMD CPU. Then, depending on the type of CPU, insert the bolts (A or B) into the appropriate holes in the cooler body (See Figure 1).



< Figure 1 >

2. Check whether or not nipples (spacers) for installing a CPU cooler are mounted between the mainboard and the computer case.

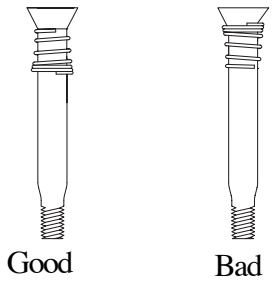
◆ Installation in a Computer Case Having Nipples (spacers) for Installing a CPU Cooler (See Figure 2)



< Figure 2 >

(1) Insert one of the provided bolts A into a tapered spring as shown in Figure 2, and insert the bolt A into an appropriate mounting hole (See Figure 1) of the cooler body. Repeat until four bolts are in stalled in the cooler body. (Caution! The diameter of the spring increases from one end to the other end. The end of the spring having a smaller diameter should be directed to the head of the bolt as shown in Figure 3.)

(2) Spread the thermal grease, which is provided together with the cooler, on the surface of the CPU core.



< Figure 3 >

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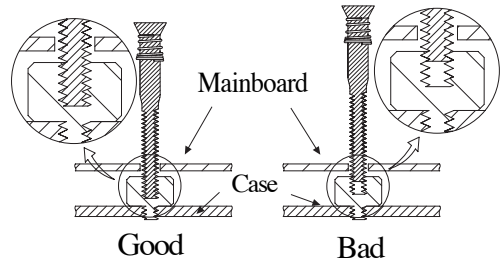
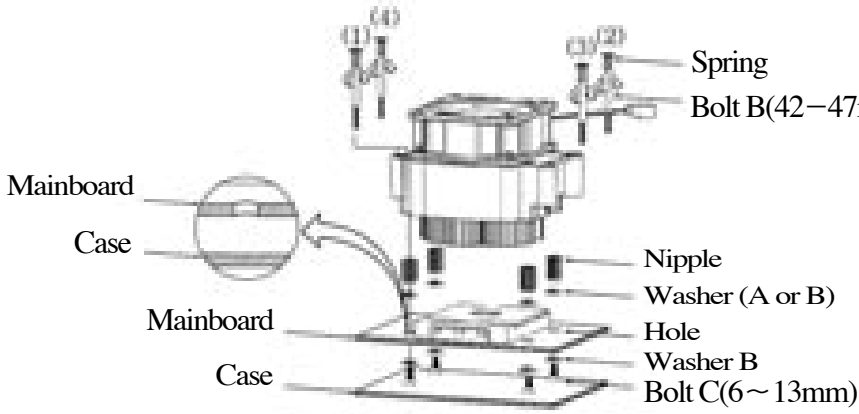
(3) Check the locations of the holes around the socket and those of the bolts A mounted in the mounting holes, and then place the FHS horizontally on the center of the CPU.

(4) To make the FHS completely contact the CPU core (this is important to protect the CPU core from overheating), tighten each bolt A by one turn in the order shown in Figure 2 (i.e., in a diagonal sequence) with a screw driver until they no longer go in (as shown in Figure 4).



< Figure 4 >

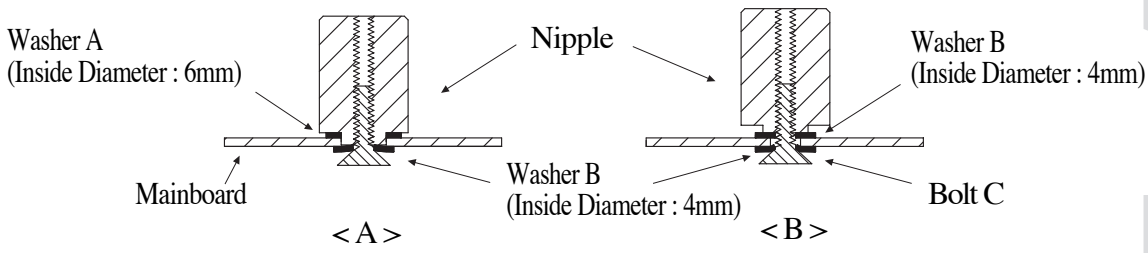
◆ Installation in a Computer Case That Does Not Have Nipples for Installing a CPU Cooler (See Figure 5)



< Figure 5 >

(1) Detach the mainboard from the computer case. Mount the provided nipples, bolts C, and washers (A or B) on the mainboard as shown in Figures 5 and 6, then reattach the mainboard to the computer case.

(Caution! Different washers are used depending on the size of the holes formed around the CPU socket on the mainboard. That is, if the size of the holes is 6 mm as shown in Figure 6(A), washer A and B is used, and if the size of the holes is 4 mm as shown in Figure 6(B), only washer B is used. A bolt with a washer is used for the upper part of the mainboard and another bolt with a washer isused for the lower part of the mainboard.)



< Figure 6 >

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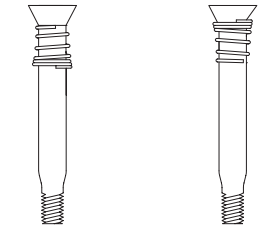
(2) Insert one of the provided bolts B into a tapered spring as shown in Figure 5, and insert the bolt B into an appropriate mounting hole of the cooler body (See Figure 1). Repeat until four bolts are installed in the cooler body.
(Caution! The diameter of the spring increases from one end to the other end. The end of the spring having a smaller diameter should be directed to the head of the bolt as shown in Figure 7.)



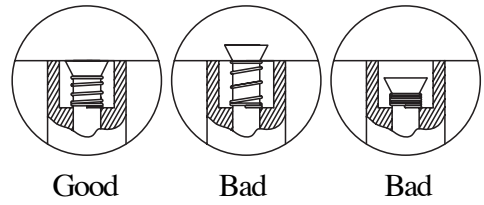
< Figure 7 >

(3) Spread the thermal grease, which is provided together with the cooler, on the surface of the CPU core.

(4) Check the locations of the nipple holes on the mainboard and the locations of the bolts B, and then place the Cooler horizontally on the center of the CPU.

(5) For Pentium 4 CPUs :

To make the FHS completely contact the CPU core (this is important to protect the CPU core from overheating), tighten each bolt B by one turn in the order shown in Figure 5 (i.e., in a diagonal sequence) with a screw driver. The bolts are mounted so that the height of the bolt heads is the same as the height of the mounting holes (as shown in Figure 8).



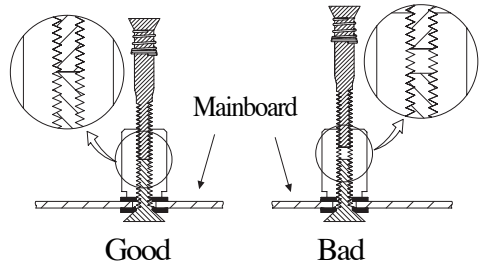
Pentium 4 CPU

< Figure 8 >

(Caution! If the height of the bolt head is much lower than that of the mounting hole, the mainboard and the CPU may be damaged.)

For AMD CPUs :

To make the FHS completely contact the CPU core (this is important to protect the CPU core from overheating), tighten each bolt B by one turn in the order shown in Figure 5 (i.e., in a diagonal sequence) with a screw driver until they no longer go in (as shown in Figure 9).



AMD CPU

< Figure 9 >

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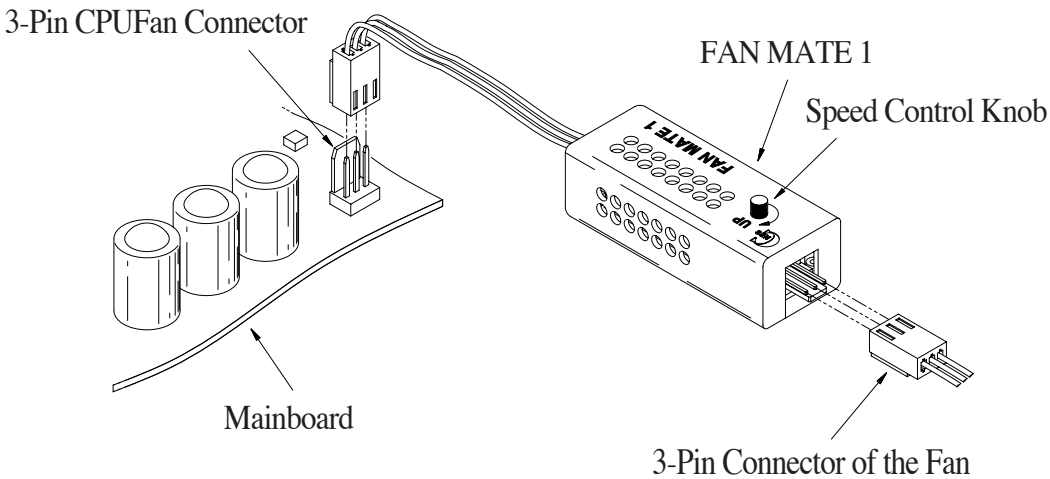
Adjusting Fan Speed

1. Connect FAN MATE 1 (adjustable fan speed connector) to the 3-pin connector of a fan as shown in Figure 10.
2. Connect FAN MATE 1 to the 3-pin CPU fan connector of the mainboard.
3. Turn on the computer after assembly is finished.
4. When booting a computer in which FAN Mate 1 is used, an alarm sound may be generated by a system monitoring program to indicate that the rotation of the CPU fan is slow. If this happens, you may turn the speed control knob fully clockwise to increase the fan speed, set "CPU Fan Detected" to "Disabled" in the BIOS settings, or set the slowest rotation of the CPU fan in the system monitoring program to less than or equal to 1500RPM.

Note 1) Some mainboards do not boot if the rotation of the CPU fan is below a certain number of RPM. If the BIOS settings are updated, Silent Mode can be used. For more information on updating BIOS , please refer to your mainboard manufacturer's web site.

5. First check what CPU you are using, then check the CPU compatibility list on page 2. When the speed control knob is turned fully counter-clockwise, the fan speed is minimum and the fan operates in silent mode. You can select the desired fan speed by turning the knob.

Note 2) FAN MATE 1 has been specifically designed for the fan of this product. Zalman Tech. Co., Ltd. is not responsible for any damage to systems or CPUs caused by using it with other types of fans.



< Figure 10 >

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❖ For more information on this product, visit our homepage at www.zalman.co.kr. ❖